

CLAIMS

1. A design knowledge information capture tool comprising:  
a storage means for storing design knowledge information generated or  
acquired during progress of a first design project, wherein the design  
knowledge information extends beyond product design information and  
5 includes information on evolution of a first design project and causal  
dependencies; an input means for allowing a user to input information  
into the storage means; and a presentation means for presenting the  
design knowledge and product design information, wherein the input  
10 means includes a design stage or task classification means that is  
adapted to select a predefined file, with a list of at least one predefined  
issue to be addressed and presents a file template to the user to allow  
the information to be input by the user in a predefined knowledge  
structure, each piece of the information being input as a label of a node.
- 15 2. A tool according to claim 1 wherein the storage means comprises an  
interactive graph editor.
3. A tool according to claim 2 wherein the graph editor comprises the label  
of the node and the node.
4. A tool as claimed in any preceding claim wherein, in use, a user is  
20 prompted by the knowledge structure, to input at least one possible  
answer to the at least one predefined issue, the at least one possible  
answer being stored as one of the, or each, piece of information at the  
label of the node.
5. A tool as claimed in claim 4 wherein the knowledge structure prompts the  
25 user to input at least one argument that supports or refutes the possible  
answer, the at least one argument being stored as one of the, or each,  
piece of information at the label of the node.
6. A tool as claimed in claim 5 wherein the at least one argument is  
classified as a supporting or a refuting argument.

7. A tool as claimed in claim 6 wherein the at least one argument can be readily identified by the user as classified as the supporting or the refuting argument.
8. A tool as claimed in any of claims 5 to 7 wherein said at least one argument is classified as a valid or an invalid argument.
9. A tool as claimed in claim 8 wherein the at least one argument is readily identified by the user and classified as the valid or the invalid argument.
10. A tool as claimed in any of claims 4 to 9 wherein the at least one answer is classified as an open, an accepted or rejected answer.
11. A tool as claimed in claim 10 wherein the at least one answer is readily identified by the user as classified as the open, the accepted or the rejected answer.
12. A tool as claimed in any preceding claim wherein the, or each, piece of information stored at the labelled node is supported by at least one text statement.
13. A tool as claimed in claim 12 wherein the at least one predefined issue is supported by the at least one text statement.
14. A tool as claimed in either claim 12 or 13 wherein the at least one text statement can be readily identified by the user as believed true or false.
15. A tool as claimed in any preceding claim wherein the node appears once only in the predefined file.
16. A tool as claimed in any preceding claim wherein the, or each, piece of information stored at the label of the node can be linked to a node on a previously input file where the, or each, piece of information has previously been raised.
17. A tool as claimed in any of claims 1 to 16 wherein the, or each, piece of information stored at the label of the node can be linked to an additional node on the predefined file, wherein the, or each, piece of information has previously been raised.

18. A tool as claimed in any preceding claim wherein a sub-issue to the at least one predefined issue can be identified and input into the storage means.
19. A tool as claimed in claim 18 wherein a user is prompted to input at least one possible answer to the sub-issue.
20. A tool as claimed in claim 18 or 19 when dependant on claim 16, wherein the sub-issue can be linked to a previously input file.
21. A tool as claimed in claim 18 or 19 when dependent on claim 17, wherein the sub-issue can be linked to the additional node.
22. A tool according to any preceding claim having a processing means to identify at least one predefined issue addressed on a first design project , which issue is encountered on a subsequent design project.
23. A tool according to claim 22 wherein the at least one predefined issue derives from the sub-issue.
24. A knowledge modelling tool having an interactive graph editor to capture a first design rationale of a first design project; the first design rationale containing data on at least one design issue; and a processing means to allow the first design rationale to be identified when the at least one design issue is encountered on a subsequent design project.
25. A tool according to claim 24 comprising an issue-based information system.
26. A tool according to claim 24 or 25 wherein the design rationale is captured in nodes of the graph editor.
27. A tool according to claim 26 wherein the nodes are part of a two-dimensional representation of the design rationale.
28. A tool according to any of claims 24 to 27 wherein dependencies between the design rationale at each of the nodes is represented by a directed link.

29. A tool according to any of claims claim 24 to 28 wherein tunnelling links that appear to tunnel into the first two-dimensional representation reappear elsewhere, either on the first two-dimensional representation or a second two-dimensional representation.
- 5 30. A tool according to claim 29 wherein a first end of the tunnelling link is represented by a first icon and a second end of the tunnelling links is represented by a second icon.
31. A tool according to claim 30 wherein the first and second icons are designed such that double clicking on the first icon causes the tunnelling  
10 link to be traversed to the second icon, and double clicking on the second icon causes the tunnelling link to be traversed to the first icon.
32. A tool comprising a knowledge modelling tool according to any of claims 24 to 31 having an interactive graph editor which enables a user to modify features of an output in order that the features can be  
15 differentiated more clearly one from another.
33. A method for capturing design knowledge information wherein the information extends beyond product design information and includes information on evolution of the first design project and causal dependencies, comprising the steps of: storing the information generated  
20 or acquired during progress of a first design project in a storage means; inputting information into the storage means; presenting the information, during the step of inputting the information; classifying a design stage and selecting a predefined file with a list of predefined issues to be addressed; and presenting a file template for inputting the information  
25 into a predefined knowledge structure.
34. A method for capturing and reusing a design rationale of a first project, the design rationale containing data on at least one design issue, including the steps of: capturing the design rationale in a graphical format, and processing the graphical format to allow the first design  
30 rationale to be identified when the at least one design issue is encountered on a second design project.

35. A method for capturing and reusing a design rationale of a first project, the design rationale containing data on at least one design issue, including the steps of: capturing the design rationale in a graphical format; and processing the graphical format to allow the first design rationale to be identified when the at least one design issue is encountered on a second design project.
36. A method according to claim 35 utilising an issue-based information system.
37. A method according to any of claims 33 to 35 wherein the step of capturing the design rationale in graphical format incorporates the step of utilising nodes of a graph editor.
38. A computer programmed to capture and reuse a design rationale of a first project, the design rationale containing data on at least one design issue.
39. A computer programmed to capture design knowledge information, the design knowledge information being generated or acquired during progress of a first design project wherein the information extends beyond project design information includes information evolution of the first design project and causal dependencies including means for: storing the information in a storage means; and input means for inputting information into the storage means by first classifying a design stage and selecting a predefined file with a list of predefined issues to be addressed and presenting a file template to a user to allow the information to be input by the user in a predefined knowledge structure.
40. A computer programmed to capture and reuse a design rationale of a first project, the design rationale containing data on at least one design issue including means for: capturing the design rationale in a graphical format, and processing the graphical format to allow the first design rationale to be identified when the at least one design issue is encountered on a second design project.

41. A computer programmed to capture design knowledge information, wherein the design knowledge information is generated or acquired during progress of a first design project, the information extending beyond product design information and including information on evolution of the first design project and causal dependencies, according to the method described in any of claims 33 to 37.
42. A computer programmed to capture design information, wherein the design information is generated or acquired during progress of a first design project, the information extending beyond product design information and including information on evolution of the first design project and causal dependencies leading from one design to another.
43. A computer programmed to capture design information, the design information being generated or acquired during progress of a first design project wherein the information extends beyond project design information and includes information evolution of the first design project and causal dependencies including means for: storing the information on a storage means; and means for inputting the information into the storage means by first classifying a design stage and selecting a predefined file with a list of predefined issues to be addressed and presenting a file template to a user to allow the information to be input by the user in a predefined knowledge structure.
44. A computer program executable to capture design knowledge information, wherein the design knowledge information is generated or acquired during progress of a first design project, the information extending beyond product design information and including information on evolution of the first design project and causal dependencies, according to the method described in any of claims 33 to 37.
45. A computer program executable to capture and reuse a design rationale of a first project, the design rationale containing data on at least one design issue.

- 37 -

46. A computer program executable to capture design information, wherein the design information is generated or acquired during progress of a first design project, the information extending beyond product design information and including information on evolution of the first design project and causal dependencies leading from one design to another.
47. A data storage medium on which is stored a computer program according to any of claims 44 to 46.
48. A system operable to capture and reuse a design rationale of a first project, the design rationale containing data on at least one design issue according to the method described above.
49. A system operable to capture design knowledge/information, the design knowledge/information being generated or acquired during progress of a first design project wherein the information extends beyond project design information and includes information on evolution of the first design project and causal dependencies, according to the method described above.
50. A system operable to capture design knowledge information, the design knowledge information being generated or acquired during progress of a first design project wherein stored information extends beyond project design information and includes information on evolution of the first design project and causal dependencies, according to the method of any of claims 33 to 37.
51. A system operable to capture and reuse a design rationale of a first project, the design rationale containing data on at least one design issue according to the method described above.
52. A tool substantially as hereindescribed with reference to Figures 2 to 10.
53. A computer programmed substantially as hereindescribed with reference to Figures 2 to 10.
54. A system substantially as hereindescribed with reference to Figures 2 to 10.